UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/657,585	09/08/2000	Wen-Kuan Chen	EM/CHEN/5997	2683

7590 01/30/2004	**EXAMINER**
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ART UNIT	PAPER NUMBER
2623	

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DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/657,585	CHEN, WEN-KUAN
	Examiner	Art Unit	
	Colin M. LaRose	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____ .

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-13* is/are pending in the application.

  4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-5 and 7-13* is/are rejected.

7) ☒ Claim(s) *6* is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

  a)☐ All   b)☐ Some *   c)☐ None of:

    1.☐ Certified copies of the priority documents have been received.

    2.☐ Certified copies of the priority documents have been received in Application No. _____ .

    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

  * See the attached detailed Office action for a list of the certified copies not received.

13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

  a) ☐ The translation of the foreign language provisional application has been received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: .

DETAILED ACTION

Claim Objections

1.   Claims 8-12 are objected to because of the following informalities:

Claim 8 states, "read operations of bit-stream data can be cyclically repeated." The

invention should be claimed in terms of what the invention *is* and not what the invention *could*

possibly be. The language "can be" renders the claim indefinite. Appropriate correction is

required.

Claim 10 states, "the variable-length decoder can discard." The invention should be

claimed in terms of what the invention *is* and not what the invention *could possibly* be. The

language "can" renders the claim indefinite. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his invention.

3.   Claims 8-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for

failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention.

Claim 8 recites the limitation "the second decoding process" in line 2. There is

insufficient antecedent basis for this limitation in the claim. Correction is required.

For examination purposes, claim 8 will be assumed to depend from claim 7, so that "the

second decoding process" of claim 8 refers to "a second decoding process" recited in claim 7.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5.   Claims 1, 3-5, 7, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S.

Patent 5,146,325 by Ng.

Regarding claim 1, Ng discloses a high-resolution picture decoding device (figure 4),

comprising:

a memory device (e.g. figure 5) having, *inter alia*, a bit-stream buffer (300, figure 5), a

temporary buffer (47 or, equivalently, 314, figure 5), and a frame buffer (48, or equivalently,

316, figure 5), the bit-stream buffer being adapted to store bit-stream data from a storage media

(the video data received by the bit-stream buffer 300 is stored in buffers 18 & 19 (figure 2) prior

to transmission to the decoding device of figure 4); and

a decoding means (decompress 45 & 46, which are shown in more detail in figure 5 as

elements 302-312) for decoding the bit-stream data in the bit-stream buffer and storing decoded

frame data in the frame buffer or the temporary buffer, such that, when a still picture is to be

displayed, the frame buffer stores part of the frame data corresponding to the still picture (the

frame buffer 316 stores e.g. the even field) and the temporary buffer is provided to store the

other frame data (the temporary buffer 314 stores e.g. the odd field) which is decoded in real

time as the still picture is displayed (i.e. the data in both buffers has been decoded for real-time

image display), and the data in the frame buffer and temporary buffer is output for displaying a high-resolution still picture (i.e. data from buffers 314 & 316 is output to video RAM 318 for display).

Regarding claim 3, Ng discloses the frame data in the bit-stream buffer is represented by multiple macroblock lines after being decoded (column 3, lines 28-32: the video data is in MPEG format, which is represented by macroblocks).

Regaring claim 4, Ng discloses the frame buffer only stores part of the macroblock line corresponding to the frame data of the still picture (i.e. the frame buffer 316 only stores half of the macroblock lines of the still picture), and the temporary buffer has a memory space for storing at least one macroblock line (i.e. the temporary buffer 314 stores half of the frame of the still picture, so it can store at least one line of macroblocks).

Regarding claim 5, Ng discloses the frame buffer 316 stores even numbered macroblock lines corresponding to the frame data of the picture (column 10, lines 31-35: each buffer 314 & 316 stores either the even or odd field).

Regarding claim 7, Ng discloses for a field of displaying still picture and in a time point of switching to display the still picture, the bit-stream of a frame from the bit-stream buffer is processed by a first decoding process in one field display time of a top filed [sic] to decode the even numbered macroblock lines, and the decoded frame data is stored in the frame buffer (i.e. the even and odd field are independently decoded; therefore, the even-field data is decoded by a first process – by decompress block 46 of figure 4 – that decodes the even field of the frame during the display of the odd field, and then the decoded even field is stored in the frame buffer 316),

while in one field display time of the other fields, the bit-stream of a frame from the bit-stream is processed by a second decoding process to decode the odd numbered macroblock lines (i.e. the odd field is decoded by decompress block 45 of figure 4).

Regarding claim 13, Ng discloses a multiplexer (320) which select data in the frame buffer or the temporary buffer to output.

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7.   Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,790,138 by Agarwal in view of Ng and U.S. Patent 5,790,138 by Hsu.

Regarding claim 1, Agarwal discloses a high-resolution picture decoding device (figure 4), comprising:

a memory device having a frame buffer (407); and

a decoding means (406) for decoding the bit-stream data and storing decoded frame data in the frame buffer, such that, when a still picture is to be displayed, the frame buffer stores part of the frame data corresponding to the still picture which is decoded in real time as the still picture is displayed (i.e. the data in the frame buffer comprises only half of the entire image frame (see figure 5) and has been decoded for real-time image display), and the data in the frame

buffer is output for displaying a high-resolution still picture (i.e. data from the frame buffer is

output for display).

Agarwal does not expressly disclose the claimed bit-stream buffer to store bit-stream data

from the storage media 404.

Ng discloses the use of a bit-stream buffer (300, figure 5) to temporarily store transmitted

image data. It would have been obvious to modify Agarwal by Ng to include the claimed bit-

stream buffer since, as Ng illustrates, a bit-stream buffer facilitates the transfer of image data

between a transmitter and a receiver.

Agarwal is silent to the claimed temporary buffer.

Hsu discloses an improved memory architecture for displaying high-resolution images

(figure 3). In particular, Hsu discloses the use of an expansion frame buffer 306, which functions

as an auxiliary buffer when the capacity of the frame buffer 304b is insufficient for storing a

high-resolution image (column 2, lines 43-64). The expansion buffer 306 essentially provides

additional storage capacity with minimal additional circuitry and stores those parts of the image

frame that do not fit in the regular frame buffer 304b.

[Hsu's system is intended for use in a system having a unified memory architecture

(UMA). Agarwal does not appear to feature a UMA. However, Hsu teaches that conventionally,

it is advantageous to utilize a UMA in lieu of a separated frame buffer and main memory for an

image display system (column 1, lines 60-65), and therefore, it would have been obvious to

modify Agarwal's memory architecture to conform to a UMA system.]

It would have been obvious to one of ordinary skill in the art at the time of the invention

to further modify Agarwal by Hsu to include Hsu's expansion buffer 304b as the claimed

"temporary buffer" in Agarwal's image codec/display system, since Hsu teaches that the

inclusion of an auxiliary temporary buffer provides extra storage capacity and supports the real-

time display of high-resolution images (column 2, lines 43-64).

Regarding claim 2, Agarwal discloses frame buffer 407 stores only a half of the frame

data corresponding to the picture (figure 5: Agarwal transmits only the even or odd field of the

image to the decoder, so the frame buffer will only store either the even or odd field), and Hsu

discloses the temporary buffer has a memory space less than that of the frame buffer (column 3,

lines 6-11: the expansion memory is half or less the total frame buffer).

8.   Claims 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ng in view

of U.S. Patent 5,903,282 by Schoner et al. ("Schoner").

Regarding claim 8, Ng discloses the second decoding process is repeatedly executed (i.e.

it is repeatedly executed for an entire still picture). Ng is silent to there being two pointers for

setting a picture range in which read operations of bit-stream data can be cyclically repeated.

Schoner discloses a video decoder dynamic memory allocation system for use with an

MPEG codec. In order to reduce memory requirements of an MPEG decoder, Schoner discloses

"freezing" a displayed image. Freezing the image involves fixing two pointers, L and C, on the

first memory segment pointer of the image field for the luma and chroma parameters. During an

operation where the image is read from the bit-stream buffer, the pointers, FC and FL, are used

for reading the image. Once FC and FL read an end-of-field designation, they are redirected to

the frozen L and C pointers, and the image is re-read. See column 12, line 60 through column 13,

line 26. Thus, in the frozen state, two pointers are utilized for designating a range in which read

operations of bit-stream data are cyclically repeated.

It would have been obvious to one of ordinary skill in the art at the time of the invention

to modify Ng by Schoner to achive the claimed invention since Schoner teaches that providing

two pointers for setting a picture range in which read operations of bit-stream data can be

cyclically repeated helps reduce memory requirements in an MPEG environment (column 5,

lines 28-42).

Regarding claim 9, Ng discloses the decoding means has an image decoder which

comprises a variable-length decoder, run-length decoder, inverse quantizer, and an inverse

discrete cosine transform unit, and data read out from the bit-stream buffer is processed by the

VLD, RLD, IQ and IDCT sequentially for being stored in frame buffer or temporary buffer

(column 11, lines 2-12).

Regarding claim 10, Ng's variable-length decoder performs run-length decoding, which

eliminates unnecessary lines of macroblocks.

Regarding claim 11, Ng discloses a DC predictor (304, figure 5) for preserving DC

component of the bit-stream data processed by the VLD.

Regarding claim 12, Ng discloses only data of one field is determined by the IDCT for

being stored into the temporary buffer (i.e. the temporary buffer only stores on field of image

data processed by the IDCT block).

Allowable Subject Matter

9.   Claim 6 is objected to as being dependent upon a rejected base claim, but would be

allowable if rewritten in independent form including all of the limitations of the base claim and

any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Colin M. LaRose whose telephone number is (703) 306-3489.

The examiner can normally be reached Monday through Thursday from 8:00 to 5:30. The

examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Amelia Au, can be reached on (703) 308-6604. The fax phone number for the

organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the TC 2600 Customer Service Office whose telephone number is (703)

306-0377.

CML

Group Art Unit 2623

23 January 2004

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